Docket No.: POM-13202/29 (PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of: Jyoti Mazumder

Application No.: 10/629,062 — Confirmation No.: 5850

Filed: July 29, 2003 — Art Unit: 1762

For: FABRICATION OF CUSTOMIZED DIE INSERTS USING CLOSED-LOOP DIRECT METAL DEPOSITION (DMD) — Examiner: M. L. Padgett

APPELLANT'S APPEAL BRIEF UNDER 37 CFR §41.37

Mail Stop APPEAL BRIEF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I. Real Party in Interest

The real party in interest in this case is Jyoti Mazumder, Applicant and Appellant.

II. Related Appeals and Interferences

There are no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

The present application was filed with 20 claims. Claims 7-8 and 10-11 have been canceled, and claims 12, 13 and 15-20 have been withdrawn from consideration. Claims 1-6, 9 and 12-20 are pending; however, claims 1-6, 9 and 14 are rejected and under appeal. Claim 1 is the sole independent claim.

IV. Status of Amendments Filed Subsequent to Final Rejection

No after-final amendments have been filed.

V. Summary of Claimed Subject Matter

Independent claim 1 resides in a method of enhancing a mold, die, or tool having a body with a working surface. In particular, the body 302 is composed of aluminum or an alloy thereof, and the working surface is modified through the application of a metallurgically bonded molybdenum alloy 304 directly from CAD data using a closed-loop, direct metal deposition (DMD) process. (Specification, page 8, line 13 to page 9, line 4).

VI. Grounds of Rejection To Be Reviewed On Appeal

A. The rejection of claims 1-6 and 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,472,029 to Skszek or U.S. Publication No. 2002/0165634 to Skszek, or U.S. Publication Nos. 2002/0142107 or 2005/0121112 both to Mazumder et al., in view of U.S. Patent No. 4,505,485 to Hirakawa.

B. The rejection of claims 1-6 and 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,122,564 to Koch et al., optionally in view of U.S. Patent No. 6,046,426 to Jeantette et al., or over U.S. Patent No. 5,837,960 to Lewis et al., and further in view of U.S. Patent No. 4,505,485 to Hirakawa.

C. The rejection of claims 1-5, 7[1] and 9 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 7,139,633 in view of U.S. Patent No. 6,122,564.

VII. Argument

A. The rejection of claims 1-6 and 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,472,029 to Skszek or U.S. Publication No. 2002/0165634 to Skszek, or U.S. Publication Nos. 2002/0142107 or 2005/0121112 both to Mazumder et al., in view of U.S. Patent No. 4,505,485 to Hirakawa.

[1] Claim 7 was canceled by amendment in April 2007.

B. The rejection of claims 1-6 and 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,122,564 to Koch et al., optionally in view of U.S. Patent No. 6,046,426 to Jeantette et al., or over U.S. Patent No. 5,837,960 to Lewis et al., and further in view of U.S. Patent No. 4,505,485 to Hirakawa.

Appellant's claim 1 is very specific. The invention resides in method of enhancing a mold, die, or tool having a body with a working surface. The body is composed of aluminum or an alloy thereof, and the working surface is modified through the application of a metallurgically bonded molybdenum alloy directly from CAD data using a closed-loop, direct metal deposition (DMD) process.

The claim stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,472,029 to Skszek or U.S. Publication No. 2002/0165634 to Skszek, or U.S. Publication Nos. 2002/0142107 or 2005/0121112 both to Mazumder et al., in view of U.S. Patent No. 4,505,485 to Hirakawa. The claim also stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,122,564 to Koch et al., optionally in view of U.S. Patent No. 6,046,426 to Jeantette et al., or over U.S. Patent No. 5,837,960 to Lewis et al., and further in view of U.S. Patent No. 4,505,485 to Hirakawa.

It is noted that this rejection results in so many possible combinations and permutations, that it is difficult but not unfeasible to respond to them all. Nevertheless, despite the Examiner's protracted arguments, Appellant's specific claim limitations are not taught by the prior art, alone or in combination. On page 5 of the Final OA, the Examiner concedes that "Koch et al. do not teach the presently claimed combination of aluminum body, with a metallurgically bonded coating." On page 6, the Examiner concedes that "Skszek differ from the claims as amended by not be [sic] directed to coating and aluminum body with a molybdenum alloy." On page 7, the Examiner admits that "[w]hile the Mazumder et al. references have claimed Al or Al-Si substrates, they differ by not having the molybdenum coating." On page 8, the Examiner concedes that [a]s amended at the present [sic] the claims differ [from Lewis] by requiring an aluminum body, with a metallurgical molybdenum coating."

The rejection hinges on the teachings of Hirakawa. "While none of the various primary references or combinations of references teach the specific combinations of molybdenum alloy bonded to aluminum... (Final OA, p. 9, emphasis added), it would be obvious to import the

teachings of Hirakawa "as it shows the desirability of using this specific material combination." Appellant respectfully disagrees.

Hirakawa resides in a rotary seal providing relatively moveable surfaces in the form of a hardened wear resistant lay formed in a helical fashion. Without citing any reference in particular, the Examiner states on page 11 of the Office Action that "applicable base metals include various steels or aluminum (alloys) or Al-Si alloy where the wear-proof layer may be Cr-Mo or Mo-Ni-Cr or include molybdenum mixed with a carbide or C. The Examiner then goes on to cite certain sections of Hirakaw which talk only about wear resistance and so forth, and do not provide any motivation to combine the various references and combinations. The Examiner even concedes that Applicant's invention would not result if these combinations were made, since the Examiner states "with or without teachings of aluminum substrates."

The Examiner's specific grounds for making the combination is that "it shows the desirability of using the specific material combination, as well as teaching its formation via a laser technique process, which is suggestive of or compatible with the more specific laser deposition processes of the primary references/combinations, where the primary references/combinations provide motivation for using their technique due to its superior controllability, etc., as disclosed therein." This is not a motivation to combine. This is simply a list of observations made by the Examiner, and would not lead one of skill in the art to use the limitations set forth in Applicant's claims. And again, even if these various combinations were made, Applicant's invention as claimed would not result, thereby further precluding *prima facie* obviousness.

C. Claim 9

A terminal disclaimer is being filed herewith to overcome the nonstatutory obviousness-type double patenting rejection. This should place claim 9 in condition for allowance. It appears from the record that claim 9 was only rejected on the grounds of double patenting.

Conclusion

In conclusion, for the arguments of record and the reasons set forth above, all pending claims of the subject application continue to be in condition for allowance and Appellant seeks the Board's concurrence at this time.

Respectfully submitted,

By: _____

Date: Jan. 29, 2008

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APPENDIX A

CLAIMS ON APPEAL

1. A method of enhancing a mold, die, or tool, comprising the steps of:

providing a mold, die or tool having a body with a working surface;

the body being composed of aluminum or an alloy thereof; and

modifying the working surface of the body through the application of a metallurgically bonded molybdenum alloy directly from CAD data using a closed-loop, direct metal deposition (DMD) process.

2. The method of claim 1, wherein at least a portion of the working surface is modified to improve wear resistance.

3. The method of claim 1, wherein at least a portion of the working surface is modified to improve resistance to dissolution during a die casting operation.

4. The method of claim 1, wherein at least a portion of the working surface is modified to improve oxidation resistance.

5. The method of claim 1, wherein at least a portion of the body is modified to incorporate cooling channels to improve thermal management.

6. The method of claim 1, wherein at least a portion of the body is modified to incorporate conductive heat sinks or thermal barriers to improve thermal management.

9. The method of claim 1, wherein at least a portion of the body is cast aluminum-silicon.

14. The method of claim 1, wherein the closed-loop DMD process is based upon a robotic implementation of the DMD process.

APPENDIX B

EVIDENCE

None.

APPENDIX C

RELATED PROCEEDINGS

None.